

WHAT IS CLAIMED:

1. A carbon thin body that has a given thickness and is in the form of a thin layer having a front surface and a back surface, wherein at least in its front surface portion a curved wall is continuous, as is viewed in plan, to form an approximately netlike structure.

2. The carbon thin body according to claim 1, wherein said curved wall is arranged to approximately surround given openings in a curved form, as is viewed in plan, and substantially constitute peripheral portions of said openings.

3. The carbon thin body according to claim 1, which is positioned on a surface of an object, the back surface of said carbon thin body contacting the surface of the object, and said curved wall standing up in a standing-wall form from said surface of the object.

4. The carbon thin body according to claim 1, wherein a base that occupies the back surface side within said carbon thin body is formed in a continuous film form to be embedded in said openings.

5. The carbon thin body according to claim 1, wherein said curved wall has a hexagonal system crystal structure and the bottom plane of said hexagonal system crystal is arranged in parallel to the direction that crosses the front surface of said carbon thin body.

6. The carbon thin body according to claim 1, wherein said curved wall has an average thickness of 100 nm or less.

7. The carbon thin body according to claim 1, wherein its two points that are arbitrarily selected conduct electrically.

8. The carbon thin body according to claim 3, wherein said surface

of the object is a surface of a glass substrate.

5 9. A process for producing a carbon thin body, including the step of using plasma which is generated from gas containing a carbon compound and which a magnetic field and an electromagnetic wave are applied to, so as to form the carbon thin body on a surface of an object by chemical vapor growth,

wherein said magnetic field and the electromagnetic wave satisfy a resonance condition for electrons in said plasma.

10. The process for producing the carbon thin body according to claim 9, wherein the direction of said magnetic field and the direction along which said electromagnetic wave advances are in parallel to each other and cross said surface of the object.

11. The process for producing the carbon thin body according to claim 9, wherein said electromagnetic wave is a microwave.

12. The process for producing the carbon thin body according to claim 9, wherein ingredient gases for generating said plasma include a carbon-containing compound and hydrogen gas, and the ratio of the hydrogen gas in the ingredient gases ranges from 25% to 75%.

13. The process for producing the carbon thin body according to claim 9, wherein said surface of the object is a surface of a glass substrate.

14. The process for producing the carbon thin body according to claim 9, wherein said surface of the object is heated at 700°C or lower.

15. An electric field emission type electron source, wherein a carbon thin body in which at least in its front surface portion a curved wall is continuous to have an approximately netlike structure is used as an electron emitting member for emitting electrons forward.

16. The electric field emission type electron source according to claim 15, wherein the diameter of openings surrounded by said wall in said approximately netlike structure is larger than the height of the wall.

17. The electric field emission type electron source according to claim 15, which includes a cathode pulling-out for supplying electrons to said carbon thin body, and a extraction electrode for generating an electric field for emitting the electrons from the carbon thin body,

5 wherein said carbon thin body is positioned ahead of said cathode pulling-out electrode, contacting the upper of said cathode pulling-out electrode, and said extraction electrode is positioned ahead of the carbon thin body in the manner that said extraction electrode does not overlap with the carbon thin body, as is viewed in plan.

18. The electric field emission type electron source according to claim 15, which includes a cathode pulling-out for supplying electrons to said carbon thin body, and a backside extraction electrode, positioned in the rear of said carbon thin body, for generating, from the rear, an electric field for emitting the electrons from the carbon thin body,

5 wherein the cathode pulling-out electrode is positioned ahead of said backside extraction electrode, and said carbon thin body is positioned ahead of the cathode pulling-out electrode, contacting the upper of the cathode pulling-out electrode.

19. The electric field emission type electron source according to claim 18, wherein said cathode pulling-out electrode is arranged only in the periphery of said carbon thin body.

20. The electric field emission type electron source according to claim 18, wherein said cathode pulling-out electrode is positioned outside said backside extraction electrode not to overlap with said backside extraction electrode as is viewed in plan.